

RANDOMIZATION IN COMPUTATIONAL LINEAR ALGEBRA

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The talk will describe how ideas from random matrix theory can be leveraged to effectively, accurately, and reliably solve important problems that arise in data analytics and large scale matrix computations. We will focus in particular on accelerated techniques for computing low rank approximations to matrices. These techniques rely on randomized embeddings that reduce the effective dimensionality of intermediate steps in the computation. The resulting algorithms are particularly well suited for processing very large data sets.

The talk will also survey how randomization can be used to accelerate the solution of certain linear systems, and to minimize the movement of data in standard linear algebraic computations.